WHAT IS CLAIMED IS:

1. A process for simultaneously screening a multiplicity of polymer materials for comparative effectiveness in gas separation, the process comprising:

preparing an array of individual ports on a substrate, each individual port including a pore passing through said substrate, a gas inlet to said pore at a first location of said substrate and a gas outlet from said pore at a second location of said substrate;

placing said multiplicity of polymer materials, each within a pore of at least one individual port in an amount sufficient to form a meniscus-shaped polymer membrane within said pore;

passing a pre-selected gas flow to said inlet gas flows;

analyzing gas from each of said outlet gas flows; and,

comparing gas separation properties for said multiplicity of polymer materials.

2. The process of claim 1 wherein said simultaneous screening process further includes operating said screening at more than one temperature within the range of about 100°C to about 400°C.

3. The process of claim 1 wherein said first location of said substrate and said second location of said substrate are on opposing sides of said substrate.

4. The process of claim 1 wherein said pre-selected gas flow is fed individually to each inlet gas flow.

5. A screening system for simultaneously screening polymer materials for effectiveness in gas separation comprising;

a substrate containing an array of individual ports, each individual port including a pore passing through said substrate, a gas inlet to said pore at a first location of said substrate and a gas outlet from said pore at a second location of said substrate;

a meniscus-shaped polymer membrane situated within said pore of each individual port, with each meniscus-shaped polymer membrane formed of a pre-selected polymer material; and,

a gas analyzer controllably attached to said gas outlets.

6. The screening system of claim 5 further including a heating means for controlling temperature of individual ports within said system.

7. The screening system of claim 5 wherein said screening is of a multiplicity of polymer materials for comparative effectiveness in gas separation between polymer materials.

8. The screening system of claim 6 wherein said individual ports are separately removably from said substrate for comparative effectiveness in gas separation between polymer materials at differing temperatures, said heating means for controlling temperature of said system capable of providing different temperatures to different individual ports.

9. The screening system of claim 6 wherein said screening is of a multiplicity of similar polymer materials for comparative effectiveness in gas separation between polymer materials at differing temperatures, said heating means for controlling temperature of said system capable of providing different temperatures to different individual ports.

10. The screening system of claim 5 wherein said meniscus-shaped polymer membrane is formed in-situ within said pore.

11. In a gas separation process using a solid polymer membrane as a gas separator, the improvement wherein said solid polymer membrane is selected through the screening process of claim 1.

12. In a gas separation process using a solid polymer membrane as a gas separator, the improvement wherein said solid polymer membrane and operational temperature region of said gas separation process is selected through the screening process of claim 2.

13. A gas separation module comprising:

a substrate containing therein at least one opening passing between two locations of said substrate; and,

a polymer material contained within the opening of said substrate, said polymer material characterized as forming a meniscus-shaped separator within said opening.

14. The gas separation module of claim 13 wherein said polymer material is polybenzimidazole.

15. The gas separation module of claim 13 wherein said polymer material is polybenzimidazole and said substrate is a porous metal.

16. In a detector including a sensing element responsive to the presence of a pre-selected species, said sensing element characterized as subject to deactivation in the presence of selected volatile organic materials, the improvement being location of a polymer membrane between said sensing element and any ambient atmosphere, said polymer membrane capable of allowing the pre-selected species to pass therethrough to said sensing element and said polymer membrane capable of preventing sufficient selected volatile organic materials to pass therethrough to said sensing element whereby said sensing element is deactivated.

17. The detector of claim 16 wherein said pre-selected species is carbon dioxide.

18. The detector of claim 17 wherein said polymer membrane is polybenzimidazole.

19. The detector of claim 16 wherein said polymer membrane has a meniscus-shape.

20. A temperature gas valve comprising a gas separation module including a substrate containing at least one opening therein and a polymer material contained within the opening of said substrate, said polymer material characterized as forming a meniscus-shaped separator within said opening, said temperature gas valve characterized as preventing a pre-selected gas to pass through said polymer material at a first temperature, but allowing said pre-selected gas to pass through said polymer material at a second temperature.

21. The temperature gas valve of claim 20 wherein said first temperature and said second temperature are at least 1°C apart.